Commercial Space Transportation

William Gerstenmaier
Associate Administrator
Space Operations Mission Directorate

September 21, 2007

RFI Strategy

- The Request for Information was a tool that NASA used to collect industry information that will help shape and time upcoming strategic commercial transportation activities.

- These activities include:
  - Initiating commercial International Space Station (ISS) logistics resupply services procurement planning.
  - Developing NASA Launch Services contract lessons learned.
  - Studying how to effectively transition newly emerging services providers into commercial NASA contracts.
  - Evaluating how to fully implement the ISS National Laboratory and keep transportation procurement consistent with enabling a commercial science transportation market.

RFI Strategy

- Responders were asked to provide information and feedback on a wide variety of topics, including:
  - A description of the service provider's current and planned capability,
  - Existing NASA policies on certification and oversight of launch vehicles,
  - Any improvements NASA can make in commercial transportation services contract structures that would incentivize providers, and
  - Recommendations on commercial contract terms and conditions.
- Bottom Line:
  - We are open to any ideas that will help us – NASA and industry – have safe, reliable, and cost effective transportation.
  - ISS transportation requirements potentially allow NASA to procure transportation services in a different way than we've done in the past
    - Less NASA involvement
    - More contractor responsibility
  - We hope changes will ultimately help to evolve the low earth orbit transportation industry to one that is more cost effective and yet maintains the reliability we have today.
    - Success of any new NASA procurement model will be dependent on industry performance.
  - We are looking for possible synergy between ISS resupply and medium science transportation needs

Commercial ISS Logistics Resupply

- The desired NASA outcome is to provide safe, cost effective, and reliable logistics services for the International Space Station.
  - Vision for Space Exploration to retire Space Shuttle by 2010 results in using remaining Shuttle flights to complete ISS assembly.
  - Our International Partners are providing transportation with the ATV and HTV but there is still a need for further transportation capabilities post 2010.
  - Commercial transportation service is the preferred approach.
  - ISS logistics needs creates a market; NASA cannot guarantee a commercial company a piece of that market.
    - Commercial companies must earn a share of the market through competition
  - NASA does not have funds to purchase surplus capability in case someone does not deliver.
    - Therefore this is truly a joint endeavor - The contractor must deliver for the ISS to stay operational and ISS viability provides the continuing commercial transportation market.

- Currently evaluating the appropriate timing and content of the procurement.
  - Interested in how to effectively implement a fixed price ISS services contract.
  - Open to thoughts on how to incentivize reliability (including timeliness) rather than inspect it in.

ISS Integration

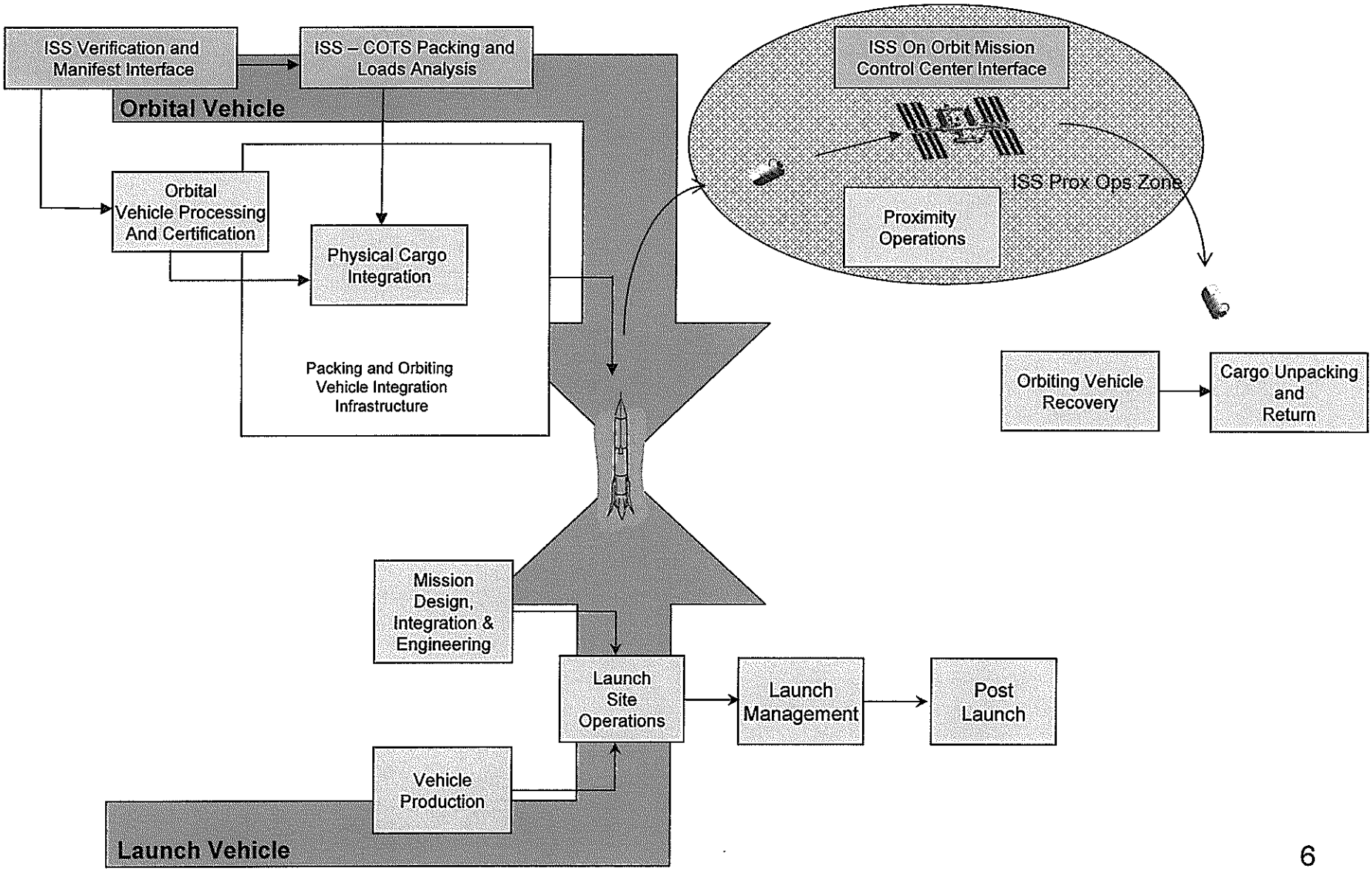
- The RFI responses provided insight into key integration requirements trades (docking, comm systems, non ISS crews) for the ISS servicing.

- The ISS Program supported integration of the funded SAA COTS Partners with their existing baseline.
  - Developed and recently baselined SSP 50808, ISS COTS Interface Requirements Document.
  - Interface requirements were based on using Node 2 Nadir as the port and using the robotic arm for berthing.
  - The baseline communication system and Prox Operations package is tied to the JEM but the ISS has been open to evaluating other options for that capability.

- The ISS Program is evaluating design baseline changes and timing to enable different interface options.
  - Working with the Constellation Program to evaluate commonality between systems.
  - Developing initial requirements for docking.
  - Assessing system requirements that are consistent across the ports.

- Any baseline changes need to be evaluated on a case by case basis to weigh program cost of hardware modifications and integration versus benefit of future providers.

ISS Transportation Concept



NASA Launch Services Background

- The Launch Services Program NASA Launch Services (NLS) contract procures commercial launch services across five commercial ELV fleets.
  - Current launch systems are Pegasus, Taurus, Delta II, Delta IV, and Atlas V.
  - Launch Services include the capability to deliver, at a minimum a 250 kg payload to orbit at an altitude of 200 km and a launch inclination of 28.5 degrees.

- Majority of purchased services since 1990 have been Medium Class
  - Medium Class has a wide performance span:
    - 1600 Kg to 3000 Kg to 675 Km Sun Synchronous
    - 500 Kg to C3=0 to 100 Kg to C3=10
  - Medium Class Launch Services will likely remain a critical need for NASA science missions

- Launch Services provided under NLS are required to be certified to Category 2 and 3 in accordance with NPD 8610.7, Launch Services Risk Mitigation Policy for NASA-Owned and/or NASA-Sponsored Payloads/Missions.
  - Changes to NPD 8610.7 were recently approved by the NASA Flight Planning Board that enable new providers to achieve Cat 3 Cert with 3 successful flights.

- Contractors, rather than NASA, retain title to hardware and control of vehicle standards, specifications, etc.

- Current NLS contracts are Firm Fixed Price Indefinite Delivery Indefinite Quantity (IDIQ) contracts with commercial item terms and conditions that are substantially consistent across all of the contracts

NASA Launch Services (NLS) Feedback

- The NLS Contract's 10 year ordering period ends in June 2010.
- Therefore, to prepare for the follow on contract, we want:
  - To understand the full range of commercial launch services available to accommodate payloads.
  - To study new and creative ways to enhance competition while maximizing Mission Success with proper commercial incentives.
  - Feedback on the current launch vehicle policies that are implemented in the NLS contract.
  - To collect industry input on commercial contract terms and conditions.
  - Feedback on whether are our recent changes to certification are helpful, not helpful, or not far reaching enough?
    - We want your thoughts- once again, the goal is cost effective and reliable commercial space transportation
- Launch Services Program will be using your input in addition to other feedback for developing lessons learned.

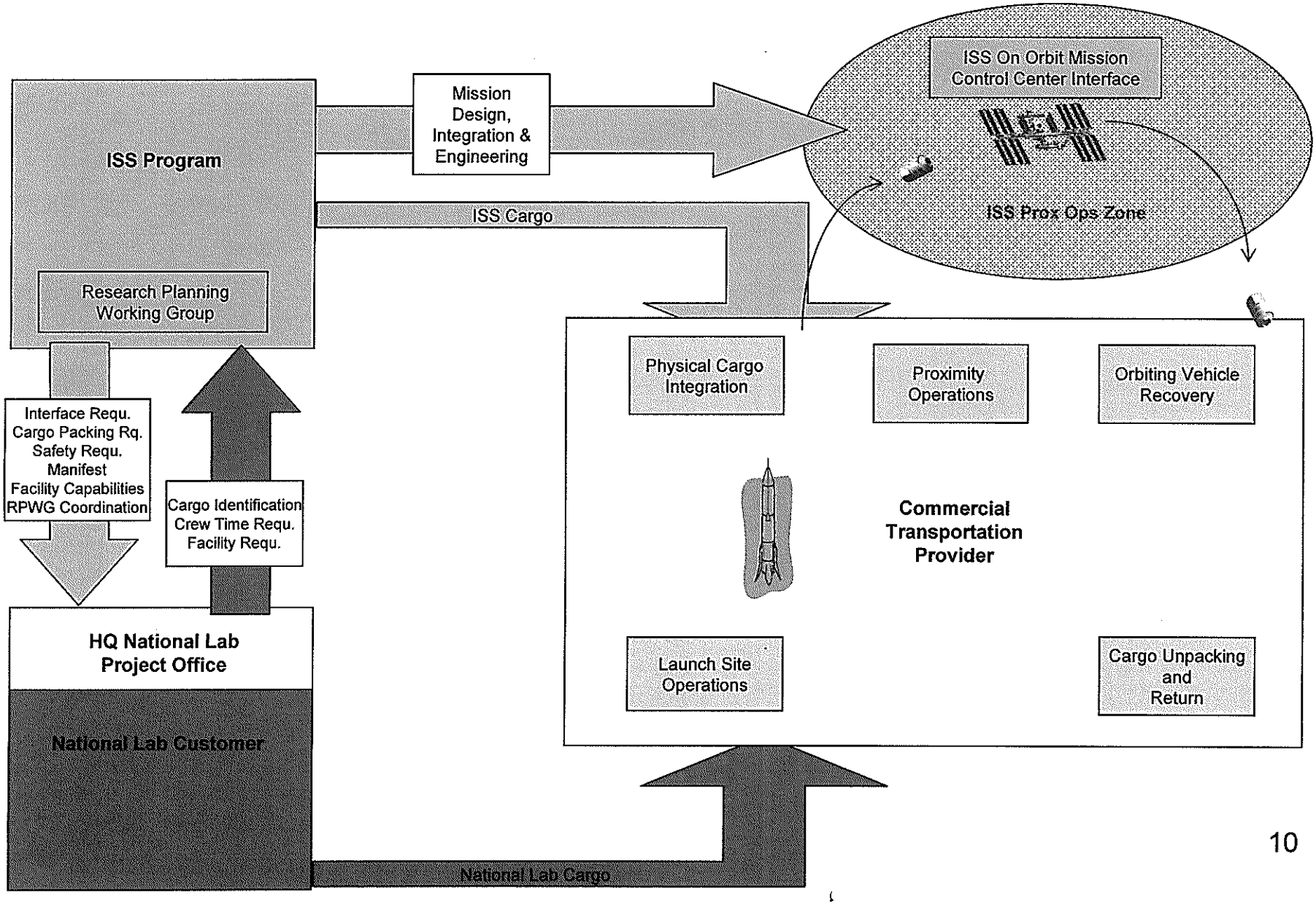
National Lab Transportation Planning

- Initial Planning is just beginning for the use of the ISS vehicle as a National Research Lab.
  - NASA - National Institutes of Health memorandum of understanding signed last week
  - NASA is conducting the ISS National Lab Workshop, on October 2-4 at ARC

- The ISS Program provides laboratory capability for research including:
  - Scheduling on orbit facilities and crew time through the Research Planning Working Group,
  - Providing interface and safety requirements for the facilities and crew related operations,
  - Sharing packing information and lessons learned for commercial transportation.
  - Coordinating research and associated hardware across the hatch, and
  - Balancing critical National Lab objectives with existing NASA missions.

- The ISS Program will not be contracting for National Lab customer upmass requirements.
  - National Lab participants will be able to independently acquire transportation services.
  - The ISS Program will be evaluating contract mechanisms that allow transportation providers to support multiple customers on flights to the ISS vehicle.

National Lab Transportation Concept



Summary

- We wanted to solicit your input before we began our planning.
- We felt that this enabled you to have the maximum opportunity to influence our planning.
- We're hoping that by both of us investing our time through written and face to face communication we have the opportunity to capture and understand your input to us.
- We need a cost effective and reliable low Earth orbit transportation services provider.
  - We must get this right and need your input.
    - ISS needs the support and the transportation industry needs ISS
    - We are not being provided funds to experiment with multiple providers
    - We are looking for possible synergy between ISS resupply and medium science transportation needs
      - If this helps strengthen the transportation market